



Work Order ID 71179

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Thursday, June 23, 2011 11:16:07 AM

Item ID: D6104-005 Accept  Setup Start 
Revision ID: Stop 
Item Name: Round Billet, 17-4
Start Date: 6/23/2011 Start Qty: 12.00  Cust Item ID:
Required Date: 7/5/2011 Req'd Qty: 12.00  Customer:
Reference:

Approvals: Process Plan: CL Date: 11/06/23 Tooling: _____ Date: _____ Run Start 
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop 

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6104	Rev B								

100  PURCHASING 0.00


Purchasing

Memo

0.00

Purchasing

Issue P/O: 14367 ☐ a) Description: S.S round billet ☐ b) Ø4.00" x
5.10" long ☐ c) Tolerance on all dimensions are +0.030"/-0.000" ☐ d) Material:
17-4PH Stainless steel (Ams 5643 or Aisi 630) ☐ e) One blank makes 2 parts ☐ f)
Material certification required

CL 11/06/24 (12)110  Receive & Inspect for Damage & Mat'l Certs 0.00


Packaging

Memo

0.00

Packaging

Ensure material certification is attached

11/7/8 (12)120  QC6- Inspect dimensions to drawing 0.00

QC

Memo

0.00

Quality Control

Ensure Material certification comply to Dwg D6104

12 107/0212

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____





NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			



NOTE: Date & initial all entries



Work Order ID 71179

Thursday, June 23, 2011 11:16:07 AM

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Item ID: D6104-005 Accept  Setup Start 
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Required Date: 7/5/2011 Req'd Qty: 12.00  Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start 
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop 

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130  Packaging Packaging	Identify as per dwg & Stock Location: <u>MAT 47</u> Memo	0.00 0.00		<u>0210712</u>		<u>12</u>			
140  QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							<u>11/7/12</u> <u>MF</u> <u>11-07-12</u>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Page 1

Thursday, June 23, 2011 11:16:04 AM

Work Order ID: 71179

Parent Item: D6104-005

Parent Item Name: Round Billet, 17-4





Start Date: 6/23/2011

Required Date: 7/5/2011

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP A: ☐01.05.08☐New Issue EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-005P  17-4 SS Roundbar 4.00"OD		Purchased	No			110	Each	0.0000	1 	12			

Rep/8/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

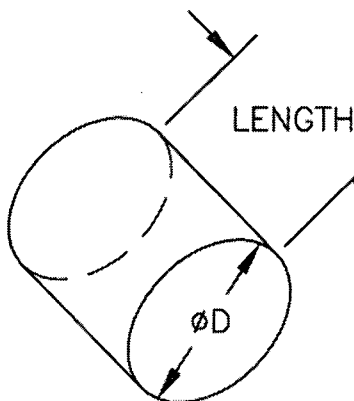
NOTE: Date & initial all entries



DESIGN <i>RT</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED
02.11.29 *[Signature]*

SPECIFICATION CONTROL DRAWING



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 71179

C211/06/23

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO14367

Purchase Order Date 6/24/2011

PO Print Date 6/24/2011

Page Number 1 of 2

Order From : VC-MET001
METAUX CASTLE
A.M. CASTLE & CO. (CANADA) INC. - BOX B9204 PO BOX 9100
TORONTO, ON M4Y 3A5
CA

Contact Name		Buyer	Chantal Lavoie
Vendor Phone	514 694 9575	Requisition Nbr	
Vendor Fax	514 695 3281	Tax Resale Nbr	10127-2607
Vendor Account Nbr		Terms	Net 30
		Currency	CAD
		FOB	Destination-Collect

Ship To : DART AEROSPACE LTD 1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

FAKED
6/24/2011

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D6103-003P	round alum billet	7/11/2011 Yes	16.00 Each	Yours ppd <i>Paul 7/8</i>	\$65.0000	\$1,040.00
		Special Inst: AS PER DWG D6103 REV. B B71178 MATERIAL: 7075-T7351 AS PER QQ-A-225/9 SIZE: 3.500" X 12.500" LONG TOLERANCE ON ALL DIMENSION ARE +0.030"/-0.000"					
2	D6104-005P	17-4 SS.Roundbar 4.00"OD	7/11/2011 Yes	12.00 Each	Yours ppd <i>Paul 7/8</i>	\$76.0000	\$912.00
		Special Inst: AS PER DWG D6104 REV. B B71179 MATERIAL: 17-4PH AS PER AMS 5643 OR AISI 630 SIZE: 4.00" X 5.10" LONG TOLERANCE AS ABOVE					
3	D6104-007P	17-4 SS Roundbar 4.50"OD	7/11/2011 Yes	12.00 Each	Yours ppd	\$80.0000	\$960.00

PO Instructions: PLEASE ADVISE PRICES \$\$\$\$\$\$\$\$\$\$\$\$

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required when applicable

Change Nbr: 1

Change Date: 6/24/2011



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO14367**

Purchase Order Date 6/24/2011

PO Print Date 6/24/2011

Page Number 2 of 2

Order From :

VC-MET001

METAUX CASTLE
A.M. CASTLE & CO. (CANADA) INC. - BOX B9204 PO BOX 9100
TORONTO, ON M4Y 3A5
CA

Contact Name

Vendor Phone 514 694 9575

Vendor Fax 514 695 3281

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Special Inst: AS PER DWG D6104 REV. B
B71182
SIZE: 4.50" X 5.10" LONG
MATERIAL & TOLERANCE AS ABOVE

PO Total:

\$2,912.00

MATERIAL CERTIFICATION
REQ'D UPON DELIVERY

PO Instructions: PLEASE ADVISE PRICES \$\$\$\$\$\$\$\$\$\$\$\$

Change Nbr: 1

Change Date: 6/24/2011

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required when applicable

175058

12X5.1

SH3 PR 5



TEST REPORT TO FOLLOW

A. M. Castle & Co.

1 box
INTERORG TRANSFER
PACKING SLIP

Page 1 of 1

Shipment No: 874285

Ship From: A. M. Castle & Co. CHICAGO 3400 NORTH WOLF ROAD FRANKLIN PARK, IL 60131		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: A. M. Castle & Co. (Canada) Inc. TORONTO 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped	F.O.B.	Freight Terms		Carrier		BOL No	
	ORIGIN	Prepaid		WHITE OAK TRANSPORT LIMITED		874285-2	

Shipment Details**Final Destination Branch - MON**

Order No	Line No	Item No	Description				
1553887	2	42464.MO	4.0000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 5.1 IN (+ .1250/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643				
Purchase Order No		Part Number		Ordered Qty		Invoice Qty	
14367		YOUR ITEM NUMBER: D6104-005		12 PCS		12 PCS	
Details							
Delivery No.	Mill	Heat Number	Mech Id	PCS	Width (IN)	Length (IN)	Shipped Qty(LBS)
84596324		9CN1		12			224.75

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

Date Printed: 06/30/2011 07:45:21 AM



NORTH AMERICAN
STAINLESS

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 644267 18 Mail To:
A.M. CASTLE AND COMPANY
3400 NORTH WOLF ROAD
FRANKLIN PARK IL 60131
Customer: 0032 001
NAS Order: LN 72107 2
Your Order: 104195

Ship To:
A.M. CASTLE AND COMPANY
3400 NORTH WOLF ROAD
FRANKLIN PARK IL 60131

Date: 5/18/2011 Page: 1 Of 1
Steel: 630 (17-4)
Finish: Hot Finish
Dia/Thk: 4.0000 in
Leg Length:
Length: 144.00 in
Corrosion:

Item Code: 42464

PRODUCT DESCRIPTION:

AMS 2303E, AMS 5643R
Round Bar, Hot Rolled, Annealed, Rough Turned
UNS S17400; EN 10204 3.1B, ASTM A484/08
ASTM A564/10 ASME SA564-07

REMARKS:

COMPLIES W/REQUIREMENTS OF DFARS EU DIRECTIVE 2002.95.
EC. ROHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG IN USA
FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight
BD81801	1556							

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Heat	Supplier #	CM	C	CB	CO	CR	CU	MN	MO	N	NI	P
9CN1		US	.034	.249	.13	15.24	3.23	.58	.19	.030	4.42	.029
			S	SI	TA	TI						
			.0075	.57	.0070	.0020						

MECHANICAL PROPERTIES

1 d o i c r	HB No.	Ferr %	TS-C KSI	YS-C KSI	EL-C %	RA-C %	RC-C No.	FREQ No.	SEV. No.
BD81801 R L	341.0	.50	196.22	174.33	11.55	44.82	42.5	.14	.07

NAS hereby certifies that the analysis on this certification is correct and the material meets the specifications stated.

QC ENGINEER

ERIC HESS